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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,258	06/20/2003	Paul B. MacCready	AVI 1005-04US	7491
28327	7590	10/16/2006	EXAMINER HOLZEN, STEPHEN A	
THE LAW OFFICE OF JOHN A. GRIECCI 703 PIER AVE., SUITE B #657 HERMOSA BEACH, CA 90254			ART UNIT 3644	
PAPER NUMBER				

DATE MAILED: 10/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/600,258		MACCREADY ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Stephen A. Holzen		3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/31/2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 8/1/2006 have been fully considered but they are not persuasive.

Applicant has argued that Langford teaches away from a reaction pressure less than one atmosphere when the aircraft is in flight.

Applicant is referring to the following statement made by Langford: "Gaseous hydrogen at approximately 20.degree. F. is injected into the fuel cell at approximately 50 psi. Oxidizer is also injected at similar conditions."

Langford does not teach what the reaction pressure is, only the pressure at which hydrogen is injected. It should be appreciated that Langford does not teach an exact pressure that oxygen is injected. Instead Langford only teaches that oxygen is injected at a pressure, which is "similar" to that of hydrogen.

The examiner asserts that Langford is silent as to the reaction pressure.

Additionally, Langford only discloses that oxygen is needed "above ambient". Applicant should appreciate that at 30km above the earth's surface, ambient pressures are approximately .01atm. Therefore if the reaction pressure were to be equal to .99atm this pressure would be far above ambient conditions.

Nowhere, as far as the examiner can tell, does Langford teach away from the present invention.

Re - Applicant's argument "C": The examiner does not consider applicant's evidence as sufficient to rebut a prima facie case of obviousness. Arguments of counsel may be effective in establishing that an examiner has not properly met his or her burden or has otherwise erred in his or her position. In these situations, an examiner may have failed to set forth any basis for questioning the adequacy of the disclosure or may not have considered the whole specification, including the drawings and the written description. However, it must be emphasized that arguments of counsel alone cannot take the place of evidence in the record once an examiner has advanced a reasonable basis for questioning the disclosure. See *In re Budnick*, 537 F.2d at 538, 190 USPQ at 424; *In re Schulze*, 346 F.2d 600, 145 USPQ 716 (CCPA 1965); *In re Cole*, 326 F.2d 769, 140 USPQ 230 (CCPA 1964).

Objective evidence which must be factually supported by an appropriate affidavit or declaration to be of probative value includes evidence of unexpected results, commercial success, solution of a long-felt need, inoperability of the prior art, invention before the date of the reference, and allegations that the author(s) of the prior art derived the disclosed subject matter from the applicant. See, for example, *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984)

The applicant asserts that since the IEEE article is silent with respect to operating LPFC at pressures below one atmosphere then a person of ordinary skill in the art would not consider reactant pressure of less than one atmosphere. The examiner appreciates applicant's efforts but does not believe that applicant has made (1) a showing of secondary consideration that rebuts a prima face case of obviousness or (2) applicant is proceeding contract to Accepted Wisdom (see MPEP 2146).

Objective evidence or secondary considerations such as unexpected results, commercial success, long-felt need, failure of others, copying by others, licensing, and skepticism of experts are relevant to the issue of obviousness and must be considered in every case in which they are present. When evidence of any of these secondary considerations is submitted, the examiner must evaluate the evidence. The weight to be accorded to the evidence depends on the individual factual circumstances of each case. The examiner does not give the submitted evidence substantial weight because the evidence provided is not concerned with the disputed issue. The issue is whether or not it would have been obvious to operate a FC such that its reaction pressure is below 1atm. The IEEE article provides information on the sensitivity of the FC to low speed blowers but is completely silent with respect to the ability to function properly below a certain reaction pressure. Applicant implies that this silence is evidence of non-obviousness. The examiner is not persuaded by this argument. There is no explicit evidence in the IEEE article that teaches away from reaction pressures less than 1atm; there is no explicit evidence in the IEEE

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article that teaches “skepticism of experts” regarding the reaction pressures less than 1atm; there is no evidence in the IEEE determine what the standard for convention wisdom is concerning FC reaction pressures.

The examiner may have been persuaded by applicant’s arguments had applicant also provided a 37 CFR 1.132 affidavit from a well-known and high reputable individual that has experience in the art of FC reaction pressures.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Langford (5,106,035).

Re - Claims 1, 3-7, 9-11, 14, 17-20: Langford III discloses an aircraft propulsion system using an air liquefaction and storage system having an electric motor for driving a propeller and an electrochemical fuel cell for receiving an oxidizer and a fuel. The air liquefaction system is used for receiving ambient air and providing oxidizer to the fuel cell. Langford further discloses a cryogenic liquid fuel tank (205), a compressor (221), a pump (208), a oxidizer reservoir (210), a sensor (209) that is used to input into the controller which determines when to activate the pump and controller for extracting an oxidizer from the atmosphere. (See Col. 3, lines 1-3).

Langford discloses every aspect of the applicant's invention except supplying a gaseous reactant at a pressure less than one atmosphere. It would have been obvious to one having ordinary skill in the art at the time the invention was made to supply a gaseous reactant at a pressure less than one atmosphere, since it has been held that where the general conditions of a claim are disclosed in one prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Re – Claims 2, 8, 16: Langford teaches a cruise altitude between 55-70k ft. (see Figure 1).

Re - Claims 12, 13, 15: Langford teaches a fuel source being a hydrogen tank containing liquid hydrogen and a heat source for controllably boiling the liquid hydrogen (see Col.4, lines 17-25). Langford further inherently discloses the limitations of claim 13 since but for the regulation of the boiling rate, no control over power would be possible.

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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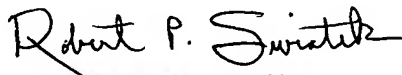
however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen A. Holzen whose telephone number is 571-272-6903. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu can be reached on 571-272-7045. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Sah

  
ROBERT P. SWIATEK  
PRIMARY EXAMINER  
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